



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2015-0245; Directorate Identifier 2014-NM-135-AD; Amendment 39-18268; AD 2015-19-06]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** We are superseding Airworthiness Directive (AD) 2012-24-10 for certain The Boeing Company Model 747-400 and -400F series airplanes. AD 2012-24-10 required installing new software, replacing the duct assembly with a new duct assembly, making wiring changes, and routing certain wire bundles. This new AD retains the requirements of AD 2012-24-10 and requires installing a new or serviceable pressure switch bracket and altitude pressure switch. This new AD also adds an airplane to the applicability. This AD was prompted by reports of intermittent or blank displays of a certain integrated display unit (IDU) that were due to an intermittent false electrical ground that was not addressed by the software installation or wiring changes required by AD 2012-24-10. We are issuing this AD to prevent IDU malfunctions, which could affect the ability of the flightcrew to read primary displays for airplane attitude, altitude, or airspeed, and consequently reduce the ability of the flightcrew to maintain control of the airplane.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF

PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-0245.

#### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-0245; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Francis Smith, Aerospace Engineer, Cabin Safety and Environmental Systems Branch, ANM-150S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6596; fax: 425-917-6591; email: [Francis.Smith@faa.gov](mailto:Francis.Smith@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012). AD 2012-24-10 applied to certain The Boeing Company Model 747-400 and -400F series airplanes. The NPRM published in the Federal Register on February 18, 2015 (80 FR 8568). The NPRM was prompted by reports of intermittent or blank displays of a certain IDU that were due to an intermittent false electrical ground that was not addressed by the software installation or wiring changes required by AD 2012-24-10.

The NPRM (80 FR 8568, February 18, 2015) proposed to retain the requirements of AD 2012-24-10. The NPRM also proposed to require installing a new or serviceable pressure switch bracket and altitude pressure switch, and add an airplane having variable number RT061 as Group 21 to the applicability of the existing AD. We are issuing this AD to prevent IDU malfunctions, which could affect the ability of the flightcrew to read primary displays for airplane attitude, altitude, or airspeed, and consequently reduce the ability of the flightcrew to maintain control of the airplane.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comment received on the NPRM (80 FR 8568, February 18, 2015) and the FAA's response.

#### **Request to Clarify Purpose of Altitude Pressure Switch**

Boeing requested that we revise the wording in the Discussion section to clarify that the altitude pressure switch provides an independent and redundant signal to the equipment cooling three-way valve. Boeing explained that the logic to

transition the three-way valve through an altitude of 25,000 feet was already present through a signal from the environmental control system miscellaneous card (ECSMC). The commenter added that the logic redundancy is described correctly elsewhere in the NPRM (80 FR 8568, February 18, 2015).

We agree with the commenter's request because changing the wording clarifies the intent of Boeing Special Attention Service Bulletin 747-21-2533, dated February 13, 2014, which describes procedures for installing an altitude pressure switch on the forward side of the station 400 bulkhead for the three-way valve of the equipment cooling system. We have revised the description of the service information, which is provided in the Related Service Information under 1 CFR part 51 section in this final rule.

## **Conclusion**

We reviewed the relevant data, considered the comment received, and determined that air safety and the public interest require adopting this AD as proposed except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (80 FR 8568, February 18, 2015) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (80 FR 8568, February 18, 2015).

## **Related Service Information under 1 CFR part 51**

Boeing has issued the following service information.

- Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013. This service information describes procedures for changing the wiring and operating logic of the equipment cooling three-way valve and replacing the existing duct assembly with a new duct assembly on the main distribution manifold of the air conditioning system.

- Boeing Special Attention Service Bulletin 747-21-2532, dated February 13, 2014. This service information describes procedures for installing an altitude pressure switch on the forward side of the station 400 bulkhead for the three-way valve of the equipment cooling system.

- Boeing Special Attention Service Bulletin 747-21-2533, dated February 13, 2014. This service information describes procedures for adding a second altitude signal to the switching logic for the three-way valve to provide a second, independent altitude signal for the equipment cooling system.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section of this AD.

## **Costs of Compliance**

We estimate that this AD affects 33 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

### Estimated costs

| Action  | Labor cost                              | Parts cost | Cost per product | Cost on U.S. operators |
|---|---|------------|------------------|------------------------|
| Duct assembly and replacement wiring changes (retained actions from AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012)) | 44 work-hours X \$85 per hour = \$3,740 | \$20,121   | \$23,861         | \$787,413              |
| Software changes (retained actions from AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012))                             | 3 work-hours X \$85 per hour = \$255    | \$0        | \$255            | \$8,415                |
| Altitude pressure switch installation (new action)  | 13 work-hours X \$85 per hour = \$1,105 | \$5,230    | \$6,335          | \$209,055              |

According to the manufacturer, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

### Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority

because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

- 2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012), and adding the following new AD:

**2015-19-06 The Boeing Company:** Amendment 39-18268; Docket No. FAA-2015-0245; Directorate Identifier 2014-NM-135-AD.

**(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

This AD replaces AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012).

**(c) Applicability**

This AD applies to The Boeing Company Model 747-400 and -400F series airplanes, certificated in any category, as identified in Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013.

**(d) Subject**

Air Transport Association (ATA) of America Code 21, Air Conditioning; 31, Instruments.

**(e) Unsafe Condition**

This AD was prompted by reports of intermittent or blank displays of a certain integrated display unit (IDU) in the flight deck. We are issuing this AD to prevent IDU malfunctions, which could affect the ability of the flightcrew to read primary displays for airplane attitude, altitude, or airspeed, and consequently reduce the ability of the flightcrew to maintain control of the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.



**(g) Retained Software Update, with Revised Service Information**

This paragraph restates the requirements of paragraph (g) of AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012), with revised service information. Within 12 months after January 16, 2013 (the effective date of AD 2012-24-10), except as provided by paragraph (j) of this AD: Install integrated display system software, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-21A2523, Revision 1, dated October 3, 2011; or Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013. As of the effective date of this AD, only Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013, may be used to accomplish the actions required by this paragraph.

Note 1 to paragraphs (g) and (j) of this AD: Boeing Alert Service Bulletin 747-21A2523, Revision 1, dated October 3, 2011; and Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013; refer to Boeing Service Bulletin 747-31-2426, dated July 29, 2010 (for airplanes with Rolls-Royce engines); Boeing Service Bulletin 747-31-2427, dated July 29, 2010 (for airplanes with General Electric engines); and Boeing Service Bulletin 747-31-2428, dated July 29, 2010 (for airplanes with Pratt & Whitney engines); as additional sources of guidance for the software installation specified by paragraph (g) of this AD.

**(h) Retained Duct Assembly Replacement and Wiring Changes, with Revised Service Information**

This paragraph restates the requirements of paragraph (h) of AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012), with revised service information. Within 60 months after January 16, 2013 (the effective date of AD 2012-24-10), except as provided by paragraph (j) of this AD: Replace the duct assembly with a new duct assembly, do wiring changes, and route certain wire bundles, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-21A2523, Revision 1, dated October 3, 2011; or Boeing Alert Service

Bulletin 747-21A2523, Revision 2, dated June 7, 2013. As of the effective date of this AD, only Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013, may be used to accomplish the actions required by this paragraph.

**(i) New Installation of Pressure Switch Bracket and Altitude Pressure Switch**

Within 60 months after the effective date of this AD: Install a new or serviceable pressure switch bracket and a new or serviceable altitude pressure switch on the forward side of the station 400 bulkhead, do wiring changes, route certain wire bundles, install a new hose assembly, and perform a leak check and a functional logic test, in accordance with the Accomplishment Instructions of the service information specified in paragraph (i)(1) or (i)(2) of this AD, as applicable.

(1) For Model 747-400F series airplanes: Boeing Special Attention Service Bulletin 747-21-2532, dated February 13, 2014.

(2) For Model 747-400BCF series airplanes: Boeing Special Attention Service Bulletin 747-21-2533, dated February 13, 2014.

**(j) Actions for Group 21 Airplanes**

For Group 21 airplanes, as identified in Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013, do the actions specified in paragraphs (j)(1) and (j)(2) of this AD, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013.

(1) Within 12 months after the effective date of this AD, install integrated display system software.

(2) Within 60 months after the effective date of this AD, replace the duct assembly with a new duct assembly, do wiring changes, and route certain wire bundles.

**(k) Credit for Previous Actions**

This paragraph provides credit for actions required by paragraphs (g) and (h) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 747-21A2523, Revision 1, dated October 3, 2011, which was incorporated by reference in AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012).

**(l) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (m)(1) of this AD. Information may be emailed to:

9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD if it is approved by Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved for AD 2012-24-10, Amendment 39-17280 (77 FR 73908, December 12, 2012), are approved as AMOCs for the corresponding provisions of paragraphs (g) and (h) of this AD.

**(m) Related Information**

(1) For more information about this AD, contact Francis Smith, Aerospace Engineer, Cabin Safety and Environmental Systems Branch, ANM-150S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6596; fax: 425-917-6591; email: Francis.Smith@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (n)(3) and (n)(4) of this AD.

**(n) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing Alert Service Bulletin 747-21A2523, Revision 2, dated June 7, 2013.

(ii) Boeing Special Attention Service Bulletin 747-21-2532, dated February 13, 2014.

(iii) Boeing Special Attention Service Bulletin 747-21-2533, dated February 13, 2014.

(3) For Boeing service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>.

(4) You may view this service information at FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:  
<http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Renton, Washington, on September 9, 2015.

Michael Kaszycki,  
Acting Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.

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